

### 43. Freshwater Sting-Rays of the Ganges.

By B. L. CHAUDHURI, B.A., B.Sc.

In the *Memoirs of the Indian Museum*, Vol. III, No. I, Dr. Annandale, while describing a marine representative of the species *Trygon fluviatilis* (H.B.), reserved further remarks for a future occasion. He also exhibited full-grown specimens from fresh water of the same species and embryos of another freshwater sting-ray at the ordinary meeting of the Asiatic Society of Bengal held on 6th July, 1910 (*Proc. As. Soc. Beng.*, Vol. IV, No. 7, 1910, p. cxxiv). But owing to other pressing work Dr. Annandale is unable to take up the matter for the present, and, to avoid delay, it is thought desirable that I should draw up an additional note on the subject as I had some personal share in the investigation which took place in 1910.

Considerable doubt has existed as to the species of sting-rays that inhabit fresh water in India. These rays were first noticed in the Ganges by Hamilton (Buchanan), who was, not unnaturally, a good deal surprised to find them as high up as Bhagalpur. He was engaged in an elaborate statistical and economic survey of some Bengal districts from 1807 to 1814. After finishing his work in Rungpur, Dinajpur and Purneah he arrived at Bhagalpur in the beginning of the rainy season of 1810. It is in his notes on the fishes of the district of Bhagalpur that he first mentions freshwater rays. From Bhagalpur he proceeded up to Behar, Patna, and Shahabad, at each of which places he noticed the rays. In 1813 he went up the river viâ Allahabad to Agra and came back to Gorakhpur. During this journey also he found rays as far up as Cawnpur. In his "*Account of the Fishes of the Ganges*," which was published in 1822, he names two species:—(1) *Raia fluviatilis* and (2) *Raia sancur*. Of the first he could not give any description beyond stating that it resembled *Raia lymma*, and he explained his inability to furnish a description by saying: "I always deferred taking a description until I had an opportunity of having it drawn, and that opportunity never occurred. I cannot therefore give its specific characters." Thus only a name was left, without any description or drawing, and it is no wonder that in later times, after various fanciful conjectures, the very existence of the species was doubted. Of the second species Buchanan gave a description, but as his drawing, unfinished as it was, had to be left in India, several mistakes naturally crept into the description.

In later days, when Hamilton's original drawings were discovered in the possession of the Asiatic Society of Bengal

and were more widely known, the British Museum, etc., having been supplied with copies, the unfinished and unnamed drawing No. 65 was taken by Francis Day to represent *Raia fluviatilis*, which was therefore thought to be identical with *Trygon sephen* of the British Museum Catalogue (*Proc. As. Soc. Beng.* 1871, p. 203), though many years before Edward Blyth correctly identified *Raia sancur*, H.B., as *Trygon sephen* (Forskäl) (*Proc. As. Soc. Beng.* of 1860, p. 37). The principal mistake made by Buchanan in the description of his *Raia sancur* was his statement that it lacked a "prickle on the tail." The spine is, however, conspicuously figured in drawing No. 65, and the omission must have been due to an insufficiency of notes. His statement that he had not seen *R. sancur* above where the tide reaches might have been due to inadvertence. This last statement, however, further misled Francis Day in causing him to conclude that none of the Batoidei were really freshwater species. He thought that all the cartilaginous fishes were marine, but that some went up the rivers in quest of prey and thus were caught in fresh water. In his "*Freshwater Fish and Fisheries of India and Burma*" (1873), p. 24, para. xlii, he says: "In the sub-class *Chondropterygii*, order *Plageostomata*, there are some species which ascend rivers for predaceous purposes." On the same page, a few lines later, he adds, "neither breed in the rivers." In the appendix to the same work (p. cccv, para. 430) he named only two "Trygons" which thus went up the river:—"*Trygon narnak*<sup>1</sup>—Sakash uriya—ascends river often above tidal influence," and "*Trygon sephen*—this species is also frequently captured above the influence of the tide."

In 1877, however, in editing Hamilton's notes on fish and fisheries for Hunter's *Statistical Account of Bengal*, Day tacitly corrected his mistake about drawing No. 65 and recognized it as a figure of Hamilton's *Raia sancur* (*Statistical Account of Bengal*, Vol. XX, p. 73). In his *Fishes of India*, which came out in 1878, the name *Raia sancur*, H.B., occurs as a synonym of *Trygon sephen*, but the fish's power of adapting itself to fresh water is not recorded. Indeed, in this work, Day threw considerable doubt on to the existence of *Raia fluviatilis*, H.B., by including its name, with a note of interrogation prefixed, in the synonymy of *Trygon walga*.<sup>2</sup> This is a small fish and cannot be *Raia fluviatilis*,

<sup>1</sup> This "*Trygon narnak*" is in all probability *Trygon gerrardi*, which has been often confounded by Day with *T. Uarnak*. (See Annandale, *Mem. Ind. Mus.*, Vol. II, No. I, pp. 24 and 25.) *T. gerrardi* is often noticed in estuaries and is captured in the rivers of Orissa within tidal influence, but this fact has no bearing on the question of Hamilton's freshwater sting-rays.

<sup>2</sup> *Trygon walga* has been sunk by Annandale as a synonym of *Trygon imbricata*. (*Mem. Ind. Mus.*, Vol. II, No. I, p. 32.)

(H.B.), because *Raia fluviatilis* is stated by him to be a bigger fish than *Raia sancur*, which, by his own measurements, is 3 feet in diameter.

In the volume in the *Fauna of British India*, which came out in 1889, none of the *Trygons* are stated to have freshwater representatives, though some are said to approach shore during the monsoons. Moreover, although another Batoid (*Pristis perroteti*) has been included by Boulenger in the *Catalogue of the Freshwater Fishes of Africa* (1909), no reference is made to the existence of any *Trygon* in the rivers of that continent. When, therefore, a large number of sting-rays were met with at Buxar, Patna, Rajmehal, Bhagalpur and other places far above tidal influence, it became evident that the existing information about them was extremely defective. At the instance of the Superintendent of the Museum a systematic investigation was instituted and Rajmehal, Manihari Ghat and Bhagalpur were visited. As only mutilated specimens were as a rule to be had in these places, considerable difficulty had to be encountered in order to secure un mutilated live specimens, which established beyond doubt the occurrence of two species of freshwater sting-rays. The fish-dealers of the above places, who only deal in mutilated and cut-up fish, recognize only one kind of ray, the local name for which is *Sankach* (or *Sankchi*)—in Santali *Sankar*<sup>1</sup>; but the actual fishermen (Banpārs) distinguish two distinct kinds, both growing to a large size. The larger of the two is described as flat and thin, while the other is distinguished as high and deep. The flat species is termed by the Banpārs of Bhagalpur *pátál máriá* (or *pātter* at Rajmehal), whereas the high and deep species is named *metia* at Bhagalpur and *telia* at Rajmehal. The name *pátál máriá* indicates the habit of the bigger and flatter species, which prefers the deeper part of the river—and thus, being difficult to catch, is the rarer of the two. The name *metia* means earthy, probably having reference to the dull brown colour of the dorsal surface of the fish. In February, 1910, two adult males of the smaller species were caught by hook and line near Udhua nalla, only a few miles beyond Rajmehal, and a full-grown foetus of the same species, cut out of its mother, was secured at Rajmehal. In June two full-grown specimens, male and female, were caught by hook and line in the bed of the Ganges below Bararighat near Bhagalpur. This smaller species is undoubtedly *Hypolophus sephen* (Forskäl), which is identical with the *Raia sancur* of Hamilton. The

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<sup>1</sup> All these names are derived from the Sanskrit name *Sankar*, which means mongrel, and the fishes are probably so called because of a fancied resemblance to tortoises, the rays being supposed to be mongrels between fish and tortoises.

discovery of a foetus proves finally that this fish not only lives in fresh water very high up above tidal influence but also breeds in fresh water—a fact which was denied by Francis Day and used to be doubted by many others.

The bigger species (specimens of which were caught in the bed of the Ganges below Bararighat near Bhagalpur) may now be recognized as *Trygon fluviatilis*, in consequence of this form being the larger of the two freshwater species alluded to by Buchanan, and having the tail without a hanging fold of skin, but provided with spines. *T. fluviatilis* occurs also in the sea, specimens having been taken by the "Golden Crown" in the Bay of Bengal. The marine specimens were received deprived of their tails, but their shape and measurements at once singled them out as belonging to a hitherto undescribed species. Though Hamilton did not provide either drawings or descriptions, there is no room for doubt that this is the species which he named *Raia fluviatilis*.

The following measurements will show how closely a freshwater specimen resembles a marine one in all important proportions. The tail of the former is nearly one and a half times as long as the length of the disk. The measurements quoted are from the specimen from Bhagalpur (which has been mounted [F  $\frac{4611}{1}$ ]), and of the marine specimen [F  $\frac{4120}{1}$ ], of which the skin has been preserved in spirit. In both cases the measurements were taken on the fresh specimen:—

		<i>Specimen from the Bay of Bengal.</i>	<i>Specimen from fresh water.</i>
		<i>cm.</i>	<i>cm.</i>
Breadth of disk	..	138·75	126·25
Length of disk	..	135·0	120·0
Breadth between eyes	..	20·0	16·0
Length of snout	..	50·0	43·125
Breadth of mouth	..	12·5	11·25
Length from mouth to vent		83·75	78·75
Length of tail	..	Wanting	176·25

*T. fluviatilis* also breeds freely in fresh water, for young ones are caught in the nets in August.

The adults of both species are most frequently caught by line, the bait being either a bivalve (*Novaculina gangetica*, Bens., var. *theoboldi*, Bens.) or, more frequently, a small freshwater eel (suspected to be a new species) locally called *Andharia Sâp* and *Andharia Machhi*; both animals being found in numbers in the mud of the bed of the Ganges. *Trygon fluviatilis* is captured in largest numbers in November (*i.e.*, soon after the subsidence of the floods) and in May, when the

river falls down to its lowest level. The seasonal variation in the numbers caught in this case does not indicate either the presence or absence of individuals in any particular locality or their migratory habit, but only shows that the mode of capture proves more successful at certain seasons.

In the Ganges we have therefore freshwater representatives of at least two species of Batoidei, viz., *Trygon fluviatilis* (H.B.) and *Hypolophus sephen* (Forskäl). These species are not only found one thousand miles above tidal influence, but also breed freely in fresh water.

